WE CLAIM:

1. A micromirror array assembly, comprising:

a plurality of micromirrors arranged in an array, each supported by hinges and gimbals in a frame formed in a monolithic element, and each micromirror being individually rotatable about two axes;

a plurality of permanent magnets, at least one permanent magnet coupled to each of the plurality of micromirrors in the array;

an array of coil drivers, the coil drivers arranged into a plurality of groups, each group associated with one of the plurality of micromirrors in the array, and mounted to the frame of the plurality of micromirrors so that each group of coil drivers is in proximity to the at least one permanent magnet attached to its associated micromirror; and

a plurality of electrical leads, coupled to the coil drivers in the array, to receive control signals for independently controlling the rotation of each of the plurality of micromirrors.

2. The micromirror array assembly of claim 1, wherein four permanent magnets are coupled to each of the plurality of micromirrors in the array, first and second ones of the permanent magnets for rotating the associated micromirror about a first axis, and second and third ones of the permanent magnets for rotating the associated micromirror about a second axis.

3. The micromirror array assembly of claim 2, wherein each of the permanent magnets comprise an aligned pair of upper and lower magnet sections mounted on opposing sides of the frame.

4. The micromirror array assembly of claim 1, wherein the monolithic element comprises single-crystal silicon.

5. The micromirror array assembly of claim 4, further comprising:

a metallic coating at a surface of the micromirror.

6. A transmitter optical module, comprising:

a light source for generating a modulated beam of light;

a micromirror array assembly, comprising a plurality of micromirrors arranged in an array, for reflecting the modulated light beam; and

control circuitry for controllably and individually rotating the plurality of micromirrors to direct the reflected modulated light beam in a desired direction.

7. The transmitter optical module of claim 6, further comprising:

a lens, disposed between the light source and the micromirror array assembly, for focusing the modulated beam of light.

8. The transmitter optical module of claim 6, wherein the light source comprises a laser.

9. The transmitter optical module of claim 6, further comprising:

a plurality of permanent magnets, at least one permanent magnet coupled to each of the plurality of micromirrors; and

an array of coil drivers, the coil drivers arranged into a plurality of groups, each group associated with one of the plurality of micromirrors in the array, and mounted to the frame of the plurality of micromirrors so that each group of coil drivers is in proximity to the at least one permanent magnet attached to its associated micromirror;

wherein the control circuitry is coupled to each of the coil drivers in the array of coil drivers, for energizing the coil drivers to controllably rotate the plurality of micromirrors to direct the reflected modulated light beam in a desired direction.

10. The transmitter optical module of claim 9, wherein the control circuitry is for energizing the coil drivers in a time-multiplexed fashion, to rotate the plurality of mirrors so as to reflect the modulated light beam in first and second selected directions in a time-multiplexed fashion.

11. The transmitter optical module of claim 9, wherein the control circuitry controls a first group of the plurality of micromirrors to direct the modulated light beam in a first direction, and controls a second group of the plurality of micromirrors to direct the modulated light beam in a second direction.

12. The transmitter optical module of claim 6, further comprising at least a second light source for generating a second modulated light beam;

and wherein the control circuitry is also for controllably and individually rotating the plurality of micromirrors to direct the second modulated light beam in a desired direction.

13. A receiver optical module, comprising:

a photodetector;

a micromirror array assembly, comprising a plurality of micromirrors arranged in an array, for reflecting a received modulated light beam; and

control circuitry for controllably and individually rotating the plurality of micromirrors to reflect the received modulated light beam toward the photodetector.

14. The receiver optical module of claim 13, further comprising:

a lens, disposed between the micromirror array assembly and the photodetector, for focusing the reflected modulated light beam at the photodetector.

15. The receiver optical module of claim 13, further comprising:

a plurality of permanent magnets, at least one permanent magnet coupled to each of the plurality of micromirrors; and

an array of coil drivers, the coil drivers arranged into a plurality of groups, each group associated with one of the plurality of micromirrors in the array, and mounted to the frame of the plurality of micromirrors so that each group of coil drivers is in proximity to the at least one permanent magnet attached to its associated micromirror;

wherein the control circuitry is coupled to each of the coil drivers in the array of coil drivers, for energizing the coil drivers to controllably rotate the plurality of micromirrors to reflect the received modulated light beam toward the photodetector.

16. The receiver optical module of claim 15, wherein the control circuitry is for energizing the coil drivers to individually rotate the plurality of micromirrors to focus the reflected modulated light beam at the photodetector.

17. The receiver optical module of claim 16, further comprising:

a lens, disposed between the micromirror array assembly and the photodetector, for further focusing the reflected modulated light beam at the photodetector.

18. The receiver optical module of claim 15, further comprising:

a beam quality sensor, for sensing light intensity;

and wherein the control circuitry is for controlling the coil drivers to direct one or more of the micromirrors to reflect the modulated light beam to the beam quality sensor.

19. The receiver optical module of claim 15, wherein the control circuitry is for energizing the coil drivers in a time-multiplexed fashion, to rotate the plurality of mirrors so as to reflect modulated light beams to the photodetector from first and second selected directions in a time-multiplexed fashion.

20. The receiver optical module of claim 15, wherein the control circuitry controls a first group of the plurality of micromirrors to reflect a modulated light beam to the photodetector from a first direction, and controls a second group of the plurality of micromirrors to reflect a modulated light beam to the photodetector from a second direction.

21. An optical wireless transmission system, comprising:

a transmitter, comprising:

a signal source; and

a transmitter optical module, comprising:

a light source for generating a modulated beam of light;

a micromirror array assembly, comprising a plurality of micromirrors arranged in an array, for reflecting the modulated light beam; and

control circuitry for controllably and individually rotating the plurality of micromirrors to direct the reflected modulated light beam in a desired direction; and

a receiver, comprising:

a receiver optical module, for receiving a modulated light beam from the transmitter and producing an electrical signal responsive thereto; and

a signal destination.

22. The system of claim 21, wherein the signal source comprises a first computer.

23. The system of claim 22, wherein the signal destination comprises a second computer.

24. The system of claim 22, wherein the signal destination comprises a network hub.

25. The system of claim 21, wherein at least one of the transmitter and receiver comprises a multipoint location in the system.

26. The system of claim 21, wherein the transmitter and receiver are each adapted for indoor use.

27. The system of claim 21, wherein the transmitter and receiver are each adapted for outdoor use.

28. The system of claim 21, further comprising at least a second light source for generating a second modulated light beam;

and wherein the control circuitry is also for controllably and individually rotating the plurality of micromirrors to direct the second modulated light beam in a desired direction.

29. An optical wireless transmission system, comprising:

a transmitter, comprising:

a signal source; and

a transmitter optical module, for transmitting a modulated light beam; and

a receiver, comprising:

a receiver optical module, comprising:

a photodetector;

a micromirror array assembly, comprising a plurality of micromirrors arranged in an array, for reflecting a received modulated light beam; and

control circuitry for controllably and individually rotating the plurality of micromirrors to reflect the received modulated light beam toward the photodetector; and

a signal destination.

30. The system of claim 29, wherein the signal source comprises a first computer.

31. The system of claim 30, wherein the signal destination comprises a second computer.

32. The system of claim 30, wherein the signal destination comprises a network hub.

33. The system of claim 29, wherein at least one of the transmitter and receiver comprises a multipoint location in the system.

34. The system of claim 29, wherein the transmitter and receiver are each adapted for indoor use.

35. The system of claim 29, wherein the transmitter and receiver are each adapted for outdoor use.

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